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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,728	09/15/2003	Sachin Garg	630-045US	1515
47912 7590 10/04/2007 DEMONT & BREYER, LLC 100 COMMONS WAY, STE 250 HOLMDEL, NJ 07733			EXAMINER FEARER, MARK D	
			ART UNIT 2143	PAPER NUMBER
			MAIL DATE 10/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/662,728

Applicant(s)

GARG ET AL.

Examiner

Mark D. Fearer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :9/15/03, 11/5/04, 1/10/05, 11/10/05, 3/10/06.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements submitted on 15September2003, 05November2004, 10January2005, 10November2005, and 10March2006 have been considered by the Examiner and made of record in the application file.

Preliminary Amendment

Acknowledgement is made of the preliminary amendment filed 30November2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 4-6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al. (US 6650640 B1) in view of Erimli et al. (US 6405258 B1) and in further view of Barker et al. (US 20020131365 A1).

Consider claims 1 and 6. Muller et al. clearly shows and discloses maintaining at a protocol-data-unit excisor a first queue of protocol data units en route to a first congestible node ((“In another technique, packets received from a network are placed in a queue to await transfer to a host computer. While awaiting transfer, multiple related packets may be identified to the host computer. After being transferred, they may be processed as a group by a host processor rather than being processed serially (e.g., one at a time).”) column 7 lines 51-52); and selectively dropping, at said protocol-data-unit excisor, one or more of said protocol data units based on a first metric of said first queue ((“A provided method is random in that discarded packets are selected randomly from those packets that are considered discardable. Applying a random discard policy may be sufficient to avoid broken pipes by distributing the impact of dropped packets

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among multiple connections or flows. In addition, if a small number of transmitting entities are responsible for a majority of the traffic received at a network interface, dropping packets randomly may ensure that the offending entities are penalized proportionately. Different embodiments of the invention that are discussed below provide various combinations of randomness and intelligence, and one of these attributes may be omitted in one or more embodiments.”) column 105 lines 33-45).

However, Muller et al. fails to teach of a node sending a signal that it is ready to receive a protocol data unit. Erimli et al. discloses network stations that send PAUSE frames to a flow control counter. This reads on “... receiving at said protocol-data-unit excisor a flow control signal that indicates whether said first congestible node is ready to receive one or more of said protocol data units from said first queue; ...” (“The MIB counters 48, previously described with reference to FIG. 2, include a transmit flow control counter and a receive flow control counter for counting the number of PAUSE frames transmitted or received by each of the network station. For example, each time traffic congestion at an output port for a first network station exceeds the threshold value, a PAUSE frame is transmitted to a second network station that is currently transmitting data to the first network station. The host CPU 40 will then automatically increment the value of the transmit flow control counter for the output port associated with the first network station. When the second network station receives the PAUSE frame, the host CPU 40 increments the value of the receive flow control counter for its associated output port.”) column 13 lines 40-54). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a network

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station sending a PAUSE frame to adjust network flow as taught by Erimli et al. with a traffic controlling data engine as taught by Muller et al. for the purpose of efficient data flow control across a network. However, Muller et al., as modified by Erimli et al., fails to disclose a network station sending a PAUSE frame to adjust network flow and a traffic controlling data engine wherein the device could be added to legacy networks and not require replacing hardware. Barker et al. discloses Quality of Service functions implemented in input interface circuit interface devices in computer network hardware comprising congestion management wherein the device can be retrofitted into existing hardware ("Another benefit that distinguishes the present invention from prior art is the fact that the present invention could be easily retrofitted onto some existing switches just by replacing its IICs. Coupling such IICs to network management resources would be a low cost and simple way to implement QoS.") paragraph 0148).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate Quality of Service functions implemented in input interface circuit interface devices in computer network hardware comprising congestion management wherein the device can be retrofitted into existing hardware as taught by Barker et al. with a network station sending a PAUSE frame to adjust network flow and a traffic controlling data engine as taught by Muller et al., as modified by Erimli et al., for the purpose of cost effective congestion management.

Consider claims 2 and 9, and as applied to claims 1 and 6, respectively. Muller et al., as modified by Erimli et al. and Barker et al., discloses a protocol-data-unit excisor deciding whether to drop a protocol data unit based on Random Early Detection ("...

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discarding packets on the basis of a probability indicator injects randomness into the discard process. A random early discard policy may be sufficient to avoid the problem of broken pipes discussed above. In particular, in one embodiment of the invention, all packets are considered discardable, such that all packets are counted by counter 2410 and all are candidates for being dropped. As already discussed, however, in another embodiment of the invention intelligence is added in the process of excluding certain types of packets from being discarded.") Muller et al., column 107 lines 60-67 and column 108 lines 1-3).

Regarding claims 4 and 8, and as applied to claims 1 and 6, respectively. Muller et al., as modified by Barker et al., discloses a system for managing network flow. However, Muller et al., as modified by Barker et al., fails to teach of a system comprising Pause frame procedure of IEEE 802.3. Erimli et al. discloses a method and apparatus for controlling the flow of data frames comprising PAUSE frame. This reads on "... indication is conveyed using the Pause frame procedure of IEEE 802.3." ("A proposed flow control arrangement for a duplex environment, referred to as IEEE 802.3x[2], specifies generation of a flow control message, for example a PAUSE frame, to regulate the transfer of data and reduce congestion.") column 2 lines 24-31).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate PAUSE frame as taught by Erimli et al. with a system for managing network flow as taught by Muller et al., as modified by Barker et al., for the purpose of using the well known method of PAUSE frame to configure flow control.

Regarding claims 5 and 10, and as applied to claims 1 and 6, respectively. Muller et al., as modified by Barker et al., discloses lookahead pointers. This reads on "...a second ... or more protocol data units en route ...; and a second ... flow control signal ..." ("In this alternative embodiment a second read pointer may be used to index control queue 118 to assist in the population of memory 2102. In particular, the second read pointer may be used by packet batching module 122 to find and fetch entries for memory 2102. Illustratively, if the second, or "lookahead" read pointer references the same entry as the control queue's write pointer, then it could be determined that no new entries were added to control queue 118 since the last check by controller 2104. Otherwise, as long as there is an empty (e.g., invalid) entry in memory 2102, the necessary information (e.g., flow number) may be copied into memory 2102 for the packet corresponding to the entry referenced by the lookahead read pointer. The lookahead read pointer would then be incremented.") Muller et al., column 100 lines 43-56). However, Muller et al., as modified by Barker et al., fails to teach of two or more queues and a target node. Erimli et al. discloses multiple read and write queues attached to an overflow engine and network stations. This reads on "...a second queue for storing one or more protocol data units en route to a second congestible node; and a second receiver for receiving a flow control signal that indicates whether said second congestible node is ready to receive one or more of said protocol data units from said second queue; wherein said processor is also for selectively dropping one or more of said protocol data units based on a metric of said second queue." ("According to the exemplary embodiment illustrated in FIG. 4, the queue write side 410 may include a low

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priority portion 410a and a high priority portion 410b. A switching circuit, such as a multiplexer 418, may be provided to forward entries to either the low priority portion 410a or the high priority portion 410b of the queue write side 410. In such a case, the multiplexer 418 may direct the data to the appropriate portion of the queue write side 410 under the control of a queue state machine 420, which examines certain fields in the entry to determine its priority. Alternative logic circuitry may also be provided to receive the entries and determine to which portion of the queue write side 410 the entries should be forwarded.”) column 10 lines 32-44 (“The MIB counters 48, previously described with reference to FIG. 2, include a transmit flow control counter and a receive flow control counter for counting the number of PAUSE frames transmitted or received by each of the network station. For example, each time traffic congestion at an output port for a first network station exceeds the threshold value, a PAUSE frame is transmitted to a second network station that is currently transmitting data to the first network station. The host CPU 40 will then automatically increment the value of the transmit flow control counter for the output port associated with the first network station. When the second network station receives the PAUSE frame, the host CPU 40 increments the value of the receive flow control counter for its associated output port.”) column 13 lines 40-54).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate multiple holding queues as taught by Erimli et al. with network flow control management with lookahead capabilities as taught

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by Muller et al., as modified by Barker et al., for the purpose of buffering or caching input / output data.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al. (US 6650640 B1) as modified by Erimli et al. (US 6405258 B1) in further view of Yu (US 7031341 B2) and in further view of Barker et al. (US 20020131365 A1).

Regarding claims 3 and 7, and as applied to claims 1 and 6, respectively. Muller et al., as modified by Erimli et al. and Barker et al., discloses a system for managing network flow. However, Muller et al, as modified by Erimli et al. and Barker et al., fails to teach of a system comprising backpressure flow control. Yu discloses an interface apparatus comprising a frame buffer memory interface using high speed external ports and back pressure flow control (IEEE802.3x). This reads on "... said indication is conveyed using back-pressure flow control." ("In half-duplex mode, all ports support back pressure flow control, to minimize the risk of losing data for long activity bursts.") column 42 lines 26-28).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate back-pressure flow control as taught by Yu with a system for managing network flow as taught by Muller et al., as modified by Erimli et al. and Barker et al., for the purpose of minimal network delay.

Conclusion

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Mark Fearer whose telephone number is (571) 270-1770. The Examiner can normally be reached on Monday-Thursday from 7:30am to 5:00pm.

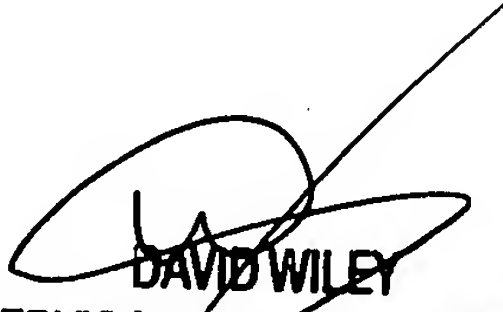
If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 571-272-4100.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Mark Fearer
M.D.F./mdf
September 28, 2007



DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 21